

JOB NO:

IGS09-11

W.O. #09-66504-0

TITLE:

Repair Lower Waterwall Tube-to-Header Welds in Unit 2

DESCRIPTION:

This project will cut out the tube-to-header welds on two header sections on the lower front wall, near the west side wall of Unit 2 and install three-foot dutchmen (tube sections) in their place. The scope will include 82 tube sections on these two headers.

JUSTIFICATION:

ECONOMIC

<u>RATE OF RETURN:</u>	260 percent
<u>PAYBACK PERIOD:</u>	0.4 years
<u>BENEFIT/COST RATIO:</u>	43
<u>ECONOMIC LIFE:</u>	25 years
<u>PV SAVINGS:</u>	\$10,000,000
<u>SALVAGE VALUE:</u>	\$0

ADDITIONAL DETAIL:

Tube sections will be cut out of all tubes at the header and reinsta will be made long enough to include the section of tube previously for the drip screens.

COST ESTIMATE:

	<u>2010-2011</u>
Engineering Labor	\$5,000
Contractor Labor	\$150,000
Material	<u>\$12,000</u>
Job Total	\$ 167,000

United Dynamics Corporation
502-957-7525

SE Engineer (Capital)
Capital 10 Major Projects
IGS09-11 Replace Lower
Waterwall Headers in Unit 2
- DEW

www.udc.net

ALTERNATIVES:

Tube failure history and NDE results indicate that there is a problem in this area of the boiler. The alternative to trying to eliminate the source of the cracking is to continue to monitor for cracks each outage and repair them as we find them. The down side to this approach is that these cracks seem to develop and propagate rapidly so it is possible that a crack could develop and cause a tube leak between major outages.

This justification is based on the fact that we have had two tube leaks occur in the southwest, front, lower waterwall headers in as many years (one in 2006 and another in 2008). There appears to be some stress built up in the tube-to-header welds that need to be relieved. The average down time for these leaks was 25 hours.

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ECONOMIC LIFE:	25 years
PV SAVINGS:	\$10,000,000
SALVAGE VALUE:	\$0

ADDITIONAL DETAIL:

Tube sections will be cut out of all tubes at the header and reinstalled correctly. The replacement tube sections will be made long enough to include the section of tube previously damaged by the heavy angle-iron attachment for the drip screens.

COST ESTIMATE:

	<u>2010-2011</u>
Engineering Labor	\$5,000
Contractor Labor	\$150,000
Material	<u>\$12,000</u>
Job Total	\$ 167,000

ALTERNATIVES:

Tube failure history and NDE results indicate that there is a problem in this area of the boiler. The alternative to trying to eliminate the source of the cracking is to continue to monitor for cracks each outage and repair them as we find them. The down side to this approach is that these cracks seem to develop and propagate rapidly so it is possible that a crack could develop and cause a tube leak between major outages.

This justification is based on the fact that we have had two tube leaks occur in the southwest, front, lower waterwall headers in as many years (one in 2006 and another in 2008). There appears to be some stress built up in the tube-to-header welds that need to be relieved. The average down time for these leaks was 25 hours.

Assuming the cost of replacement power for lost generation is \$50,000 per hour, we are losing \$1,250,000 every two years (or \$625,000 per year) to this mechanism.

EFFECT OF DEFERRAL:

Repeat tube failures due to mechanical fatigue cracking is a real possibility. As mentioned above, each tube leak outage carries a price tag of approximately \$1.5 million. In the past we have tried to control these cracks with vigilant testing during major outages but we have been fortunate to have had only two tube leaks so far.

PROJECT HISTORY:

In January of 2005 we had a tube leak in a tube-to-header weld at the lower waterwall header of Unit 2 on the 2nd header from the west wall on the front side. This leak cost us 30 hours of availability lost. In February of 2008 we had a very similar leak, again at the tube-to-header welds, in an adjacent header.

NDE testing records indicate that we have a high incident rate of crack formation in this area of the boiler, particularly in these two headers. Also, visual inspection of the tube sockets in the headers during the repairs showed that the tubes are bottomed out in the sockets when they should have been installed with a small gap between the tube stub and the bottom of the socket.

In keeping with our Boiler Tube Failure Reduction philosophy of identifying the root cause of tube failures and taking action to "kill" the mechanism, we are letting the physical evidence guide us to the replacement of all tube-to-header welds in these two headers.

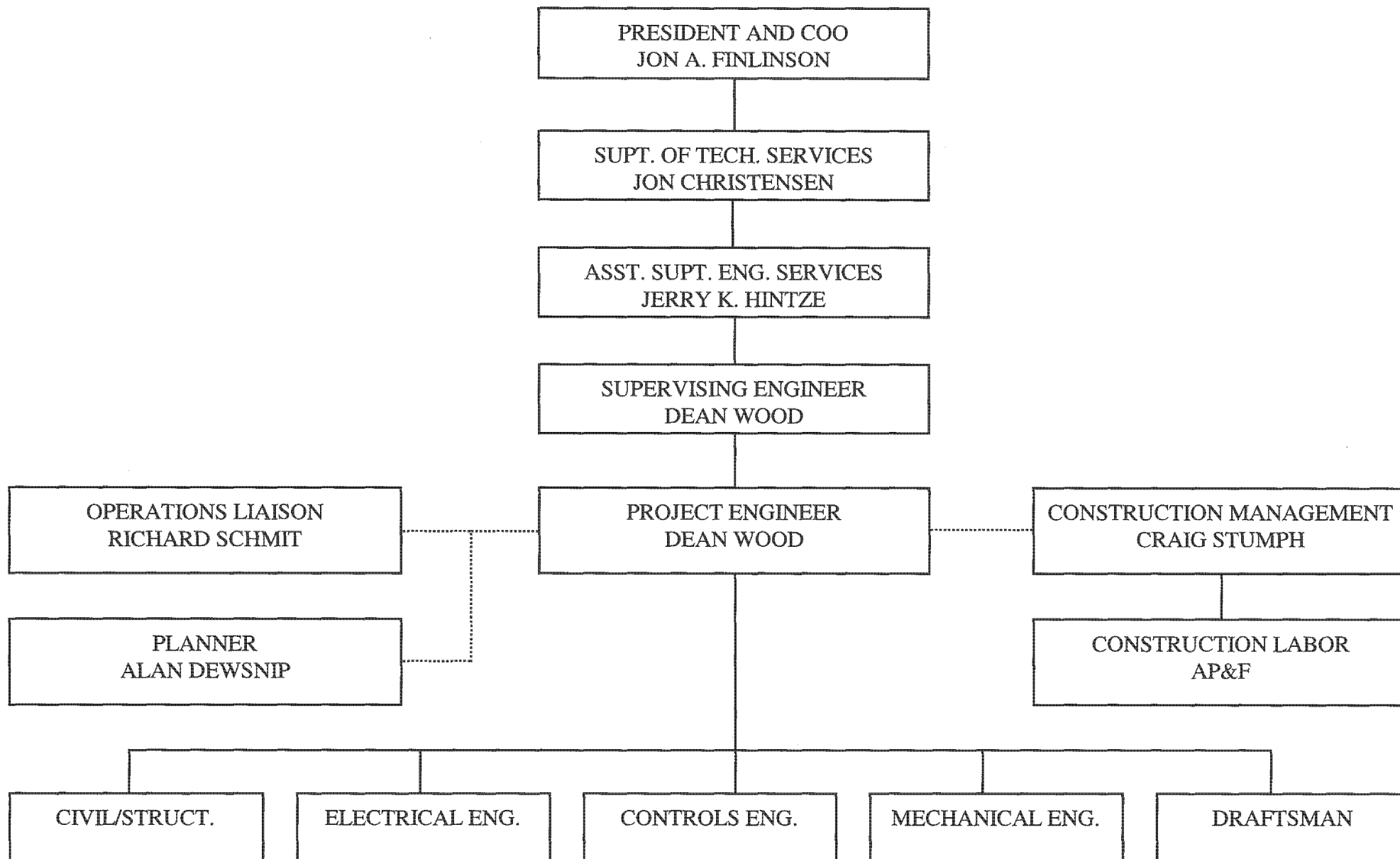
Funds for this project were moved from the 2009-10 budget into the 2010-11 budget because the Unit 2 outage was moved to the fall of 2010.

INTERMOUNTAIN POWER SERVICE CORPORATION

CAPITAL PROJECT ORGANIZATION CHART

WO #09-66504-0/ IGS09-11

Repair Lower Waterwall Tube-to-Header Welds in Unit 2



IP7019886

Project Title:

Repair Lower Waterwall Headers in Unit 2

WO # 09-66504-0

Date: 7/22/2008

Project Cost (\$)	180,000
Salvage Value of Old Equipment (\$)	0
Initial Savings (\$)	0
Total Coal Savings (Ton/yr)	
Total Fuel Oil Savings (Gal./yr)	
Power Savings (MWhr)	
Other Savings (\$)	625,000
Annual Costs With the new Equipment (\$)	
Future Salvage Value New Equipment(\$)	0
Project Life (Years)	25

Total cost of project including material and labor in current dollars

Salvage value of existing equipment that will be removed.

Savings that will be obtained at project installation.

List the tons of coal that will be saved annually as a result of the project.

List the gallons of fuel oil that will be saved annually as a result of the project.

List the annual auxillary power savings that will result from the project.

List the annual savings that will result such as maintenance savings.

List the annual costs associated with the new equipment such as maintenance cos

List the expected salvage value of the new equipment at the end of the project life.

Note: For non-annual payments or savings, use sheet 2.

Total Coal Cost (\$/Ton)	25.13
Total Fuel Oil Cost (\$/Gal)	2.75
Replacement Power Cost (\$/MWhr)	25
Cost of Money (%)	6.04
O&M Escalation (%)	3

Present Value of Project	\$10,692,319
Benefit/Cost Ratio	43.77
Payback Period	0.4
Rate of Return	260%

Notes and
Assumptions:

This justification is based on the fact that we have had two tube leaks occur in the southwest, front, lower waterwall headers in as many years (one in 2006 and another in 2008). There appears to be some stress built up in the tube-to-header welds that need to be relieved. The average down time for these leaks was 25 hours. Assuming the cost of replacement power for lost generation is \$50,000 per hour, we are losing \$1,250,000 every two years (or \$625,000 per year) to this mechanism.

Prepared by: Dean Wood

IP7019887

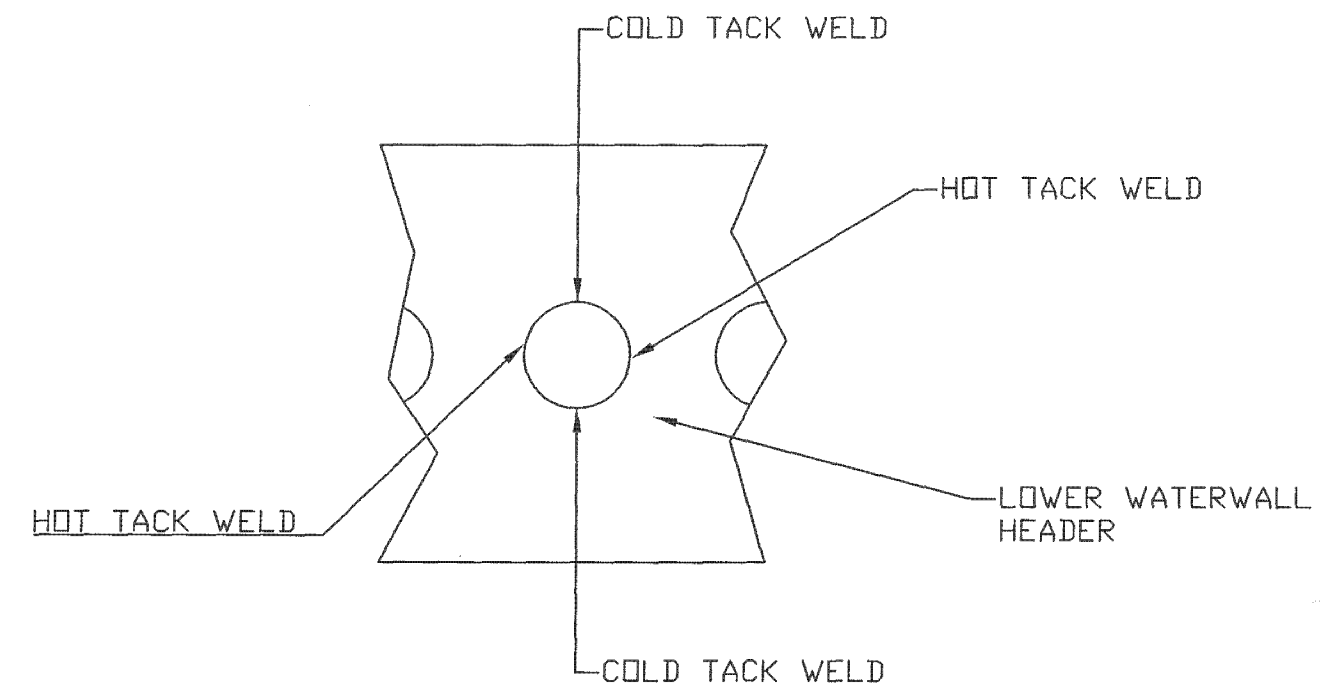
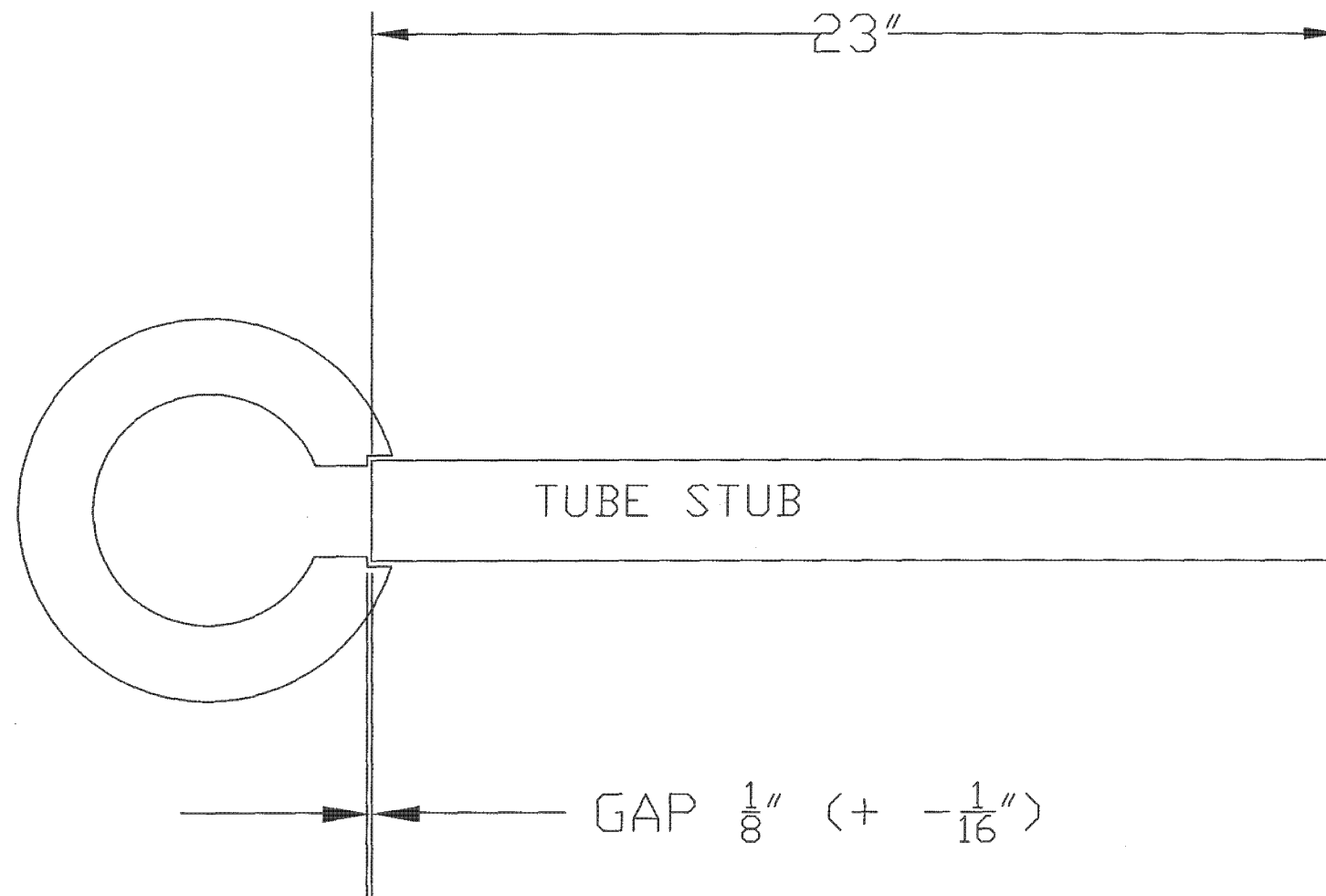
Materials	41 tubes x 2 headers x 3 ft pups	=	246 ft	SA210 A1 tube	
	246 ft * \$35/ft	= \$	8,610		\$ 12,000
	Consumables	\$	2,500		
Contract Labor	\$1,500/pup * 82 pups	= \$	123,000		\$ 150,000
	Contingency 20%		24,600.0		
Engineering	50 hrs @ \$100/hr	\$	5,000		<u>\$ 5,000</u>
					<u>\$ 167,000</u>
Pad	10%				175,350.0

TUBES TO BE CUT OUT & REPLACED
ARE ON HEADERS 6 & 7. MARKED
TUBES TO BE CUT OUT ARE ON HEADER
8. ALL TUBES ARE ON 3" CENTERS.
TUBES 38, 39, 40 & 42 WERE
REPLACED IN 2008 ON HEADER 7 (do
not replace). TUBE MATERIAL IS SA
210 A1 CF 2.5" OD X .270" MW.

BEVEL TUBES STUBS ON
NON-HEADER SIDE AT 37
1/2 DEGREES. BEVELED
ROOT FACE SHALL BE 1/16"
(- 1/16"). TIG WELD
STUBS TO EXISTING
BOILER TUBE & COVER
WITH STICK ELECTRODE.

1/8" ROOT GAP (+/- 1/16") TO BE
MAINTAINED BETWEEN THE HEADER
TUBE SOCKET BOTTOM AND TUBE
STUBS.

TACK WELD THE HEADER SIDE OF
THE TUBE STUBS ON THE TOP &
BOTTOM WHEN HEADER IS COLD.
PRE-HEAT HEADER TO 200 DEGREES
F. & TACK WELD TUBES ON EACH
SIDE. GRIND OUT COLD HEADER
TACK WELDS ON TOP & BOTTOM.
WELD TUBES TO HEADER USING A
3/8" MINIMUM SIZE FILLET WELD AND
STICK ELECTRODE.

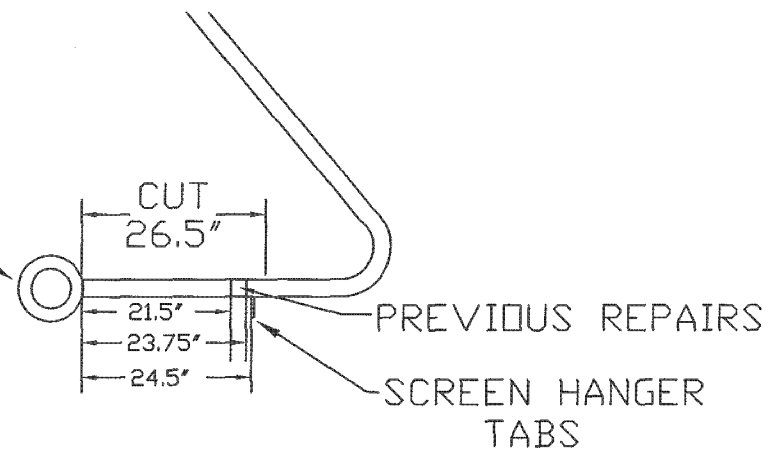


				IGS09-11 BOTTOM ASH HEADER REPLACEMENT			
0 10-25-10				DRAWING NUMBER REV			
NO. DATE DESCRIPTION OF REVISIONS				1 0			
DGN CHK APP				INTERMOUNTAIN POWER PROJECT			

NOTE: This drawing is for U-1 & U-2 CUT. U-2 was measured during the 2010 fall outage and found to be different than U-1 measurements taken during the U-1 spring 2010 outage.

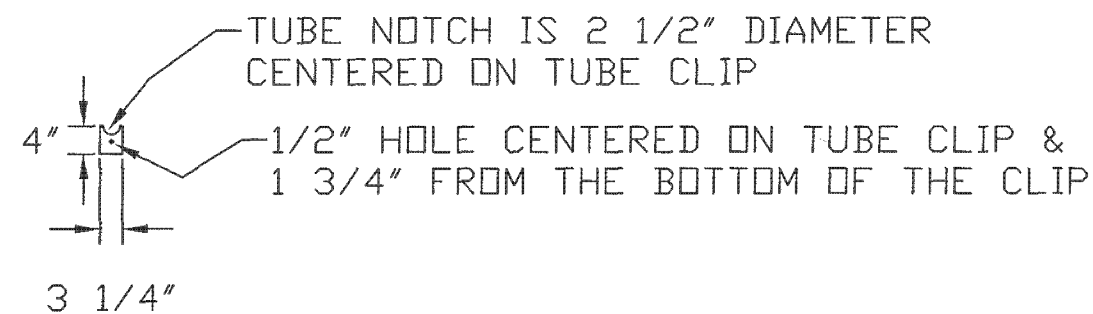
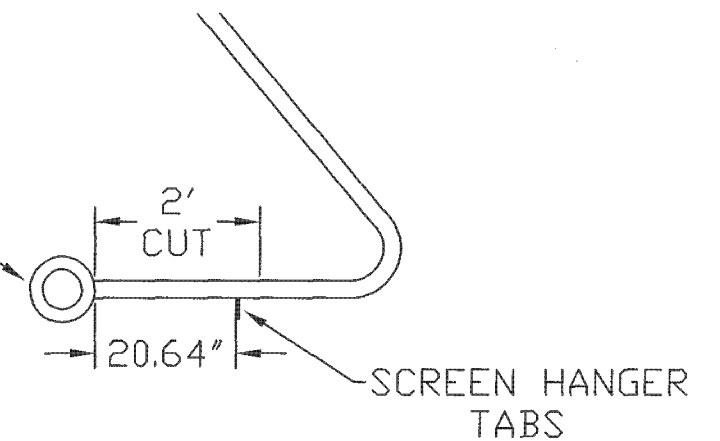
U-2 MEASUREMENTS

LOWER FRONT
WATERWALL HEADER
1.875" THICK
SA 106C MATERIAL

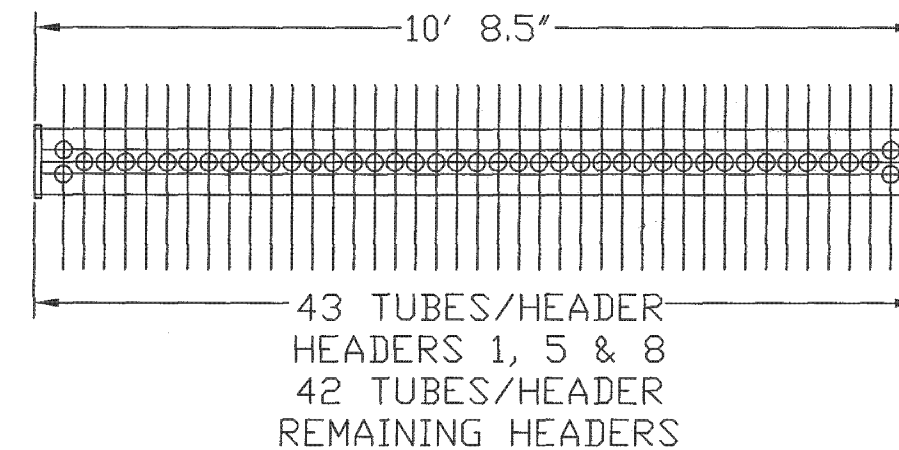


U-1 MEASUREMENTS

LOWER FRONT
WATERWALL HEADER
1.875" THICK
SA 106C MATERIAL



TUBE CLIP
1/4" X 3 1/4" X 4"



				IGS09-11 BOTTOM ASH HEADER REPLACEMENT			
0 10-25-10				DRAWING NUMBER REV			
NO. DATE				DESCRIPTION OF REVISIONS			
				DGN CHK APP			
				IPPPower PROJECT			
				2 0			



PURCHASE ORDER

05 OCT 2010

VENDOR MUST SHOW P.O. NUMBER ON ALL INVOICES, BILL OF LADING, CORRESPONDENCE, AND ON PACKING LISTS IN EACH CONTAINER, TO INSURE PROMPT PAYMENT. CHARGES FOR TRANSPORTATION MUST BE SUPPORTED BY COPY OF FREIGHT BILL.

PURCHASE ORDER NO.	VENDOR CODE	REQUISITION NO
11-45603-905	8146	275210

VENDOR: AP&F CONSTRUCTION
215 SO RIVER BEND WAY; SUITE B
NORTH SALT LAKE, UT 84054

*** SHIP TO ***
INTERMOUNTAIN POWER SERVICE CORPORATION
850 W. BRUSH WELLMAN RD.
DELTA, UT 84624-9546

801-397-2763 OR 801-450-1311

CONFIRMING DO NOT DUPLICATE	NON CONFIRMING X	SHIP VIA BEST WAY	TERMS 1% 15 NET 30	FOB POINT DEST. PP & ADD	PAGE OF 1 1	FAX
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INTERMOUNTAIN POWER SERVICE CORPORATION'S STANDARD TERMS AND CONDITIONS ARE INCLUDED AS PART OF THIS AGREEMENT

QUANTITY ORDERED	U M	IPSC PART NO.	DESCRIPTION	ACCOUNT NUMBER	UNIT PRICE	EXTENSION
1	EA		LINE 1 SERVICE CONTRACT RELEASE FOR U-2 LOWER WATERWALL HEADER AND TUBE WORK. WORK IS FOR IGS09-11. RELEASE # 905 AGAINST SERVICE CONTRACT # S45603 PURCHASE PRIORITY #4 APPRD BY J FINLINSON *** SERVICE CONTRACT DESCRIPTION *** WORK AND MATERIALS PROVIDED MUST BE IN ACCORDANCE WITH CONTRACT FOR SUPPLEMENTAL MAINTENANCE SERVICES CONTRACT 04-45603 DATE REQUIRED 10/18/10	2SGX-402 09-66504-0	150,000.00	150,000.00

United Dynamics Corporation
502-957-7525

Purchasing

www.udc.net

TOTAL COST 150,000.00

1. Invoices and correspondence may be mailed to Intermountain Power Service Corporation, 850 West Brush Wellman Rd., Delta, Utah, 84624-9546.
2. Acknowledgement is required if shipment will not be made within FIVE days.
3. Mark packages or items with IPSC part number and/or P.O. Line number. Show number on invoice and packing slip.
4. Vendor must furnish applicable material safety data sheets.
5. Add to invoice all applicable federal taxes.

UTAH VENDORS ARE TO ADD TO THE INVOICE ALL APPLICABLE STATE, AND COUNTY TAXES.

OUT OF STATE VENDORS, LICENSED TO COLLECT UTAH TAXES, ARE TO ADD TAX OF 5.95%.

UTAH TAXES WILL BE ACCRUED BY IPSC FOR OUT OF STATE VENDORS NOT LICENSED TO COLLECT UTAH STATE TAX

LESLIE LOVELL 435-864-4414

BUYER

REVIEWED BY *Jan A. Finlinson* 10/6/10

IP7019891

28 OCT 2010

11-85000

7533

276194

WESTERN STATES METALS
798 WEST 1700 SOUTH
SALT LAKE CITY, UT 84104

* * * S H I P T O * * *
INTERMOUNTAIN POWER SERVICE CORPORATION
850 W. BRUSH WELLMAN RD.
DELTA , UT 84624-9546

800-378-0562 OR 801-978-0562

X UPS GROUND NET 30 S/P P.P. & ADD 1 1 NONE

1	EA	LINE 1 BAR, COPPER, ROUND, 2.5" X 7.25"	2SGX-402 09-66504-0	72.00	72.00
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CONFIRMING TO CHERYL - DO NOT DUPLICATE

CMP/CP

THIS IS A CONFIRMING PURCHASE ORDER
DUPLICATE ITEMS WILL BE RETURNED AT YOUR EXPENSE

**INVOICES MAY BE TRANSMITTED TO THE FOLLOWING
ADDRESS: invoice@ipsc.com**

DATE REQUIRED 10/29/10

TOTAL COST

72.00

CHRISTI PALMER 435-864-4414

REVIEWED BY CHRISTI PALMER

IP7019892

Cost Detail Report for Specified Work Orders

Work Order	Source	Po No.....	Vendor Name.....	Wo Part Desc	Amount	Tax	Freight	Tax On Freight
09-66504-0	IC			WELD MATERIAL, ROD	48.18			
09-66504-0	IC			WELD MATERIAL, CODE ELECTRODES	162.05			
09-66504-0	IC			STEEL, SQUARE BAR	7.70			
09-66504-0	IC			STEEL, SQUARE BAR	7.70			
09-66504-0	IC			TUBING, 02.50 OD	2827.41			
09-66504-0	IC			TUBING, 02.50 OD	2115.70			
09-66504-0	IC			WELD MATERIAL, ROD	61.46			
09-66504-0	IC			TUBING, 02.50 OD	-1442.56			
09-66504-0	IC			STEEL, PLATE	859.79			
09-66504-0	IC			WELD MATERIAL, MIG WIRE	134.86			
09-66504-0	IC			STEEL, PLATE	-859.79			
09-66504-0	IC			STEEL, PLATE	291.00			
	**							
09-66504-0	IC				4213.50	0.00	0.00	0.00
09-66504-0	JE			JOURNAL ENTRY	-81.73			
09-66504-0	JE			JOURNAL ENTRY	41.69			
	**							
09-66504-0	JE				-40.04	0.00	0.00	0.00
09-66504-0	LD			LABOR	126.54			
09-66504-0	LD			LABOR	126.54			
09-66504-0	LD			LABOR	126.54			
09-66504-0	LD			LABOR	695.97			
09-66504-0	LD			LABOR	94.91			
	**							
09-66504-0	LD				1170.50	0.00	0.00	0.00
09-66504-0	PJ	11-45603-989	AP&F CONSTRUCTION	PAYMENT FOR WORK ON THE LOWER WATERWALL	46011.68			
09-66504-0	PJ	11-45603-995	AP&F CONSTRUCTION	PAYMENT FOR LOWER WATER WALL HEADER WORK	41369.12			
09-66504-0	PJ	10-81905	OLYMPUS NDT INC.	GAUGE, THICKNESS MEASURING, ULTRASONIC,	3900.00	232.05	23.04	
09-66504-0	PJ	11-85000	WESTERN STATES METALS	BAR, COPPER, ROUND, 2.5" X 7.25"	72.00	4.83	19.00	
09-66504-0	PJ	11-45603-944	AP&F CONSTRUCTION	PAYMENT FOR LOWER WATERWALL TUBE REPLACE	4563.67			
09-66504-0	PJ	11-45603-964	AP&F CONSTRUCTION	PAYMENT FOR THE LOWER WATER WALL HEADER	37927.85			
09-66504-0	PJ	10-81905	OLYMPUS NDT INC.	PROBE, THICKNESS, ULTRASONIC, OLYMPUS P/	332.00	19.75	1.96	
09-66504-0	PJ	11-45603-28	AP&F CONSTRUCTION	PAYMENT FOR REPAIRS ON THE LOWER WATER W	9336.52			

United Dynamics Corporation
502-957-7525

TIMS

www.udc.net

Report Name: MO.COST.DETAIL.WITH.SUBS

IP7019893

Cost Detail Report for Specified Work Orders

Work Order	Source	Po No.....	Vendor Name.....	Wo Part Desc	Amount	Tax	Freight	Tax On Freight
09-66504-0	PJ	11-45603-44	AP&F CONSTRUCTION	PAYMENT FOR REPAIRS TO THE LOWER WATER W	2698.02			
	**							
09-66504-0	PJ				146210.86	256.63	44.00	0.00
09-66504-0					151554.82	256.63	44.00	0.00
					151554.82	256.63	44.00	0.00

28 records listed.

Report Name: MO.COST.DETAIL.WITH.SUBS

IP7019894

From: Max Peterson <max@apfindustrial.com>
To: Craig Stumph <Craig-S@ipsc.com>
Date: 9/14/2010 5:11 PM
Subject: Re: Bottom Ash Picture

Can we leave three & cut three out ect. ect. thanks Max

----- Original Message -----

From: Craig Stumph <Craig-S@ipsc.com>
To: max@apfindustrial.com
Sent: Tue, September 14, 2010 5:03:44 PM
Subject: Bottom Ash Picture

Max,

We can take at least 3 at a time. I will get with Dean & Bret.

Craig

United Dynamics Corporation
502-957-7525

Groupwise

www.udc.net

IP7019895

IPSC - Delta
Assemblies numbered right to left (E to W)
Tubes numbered from sootblower CL out

Unit # 2
BOTTOM ASH AREA

October 2010 A - 1

Priority	Wall	Tube #	LOCATION WORK REQUIRED	Pic. #	DATE W/C	VERIFIED	ACC.
Note			All of the tube stubs in header #6 and #7 were replaced from the header to approximately the slag screen hanger lugs during the 2010 outage. Repair of the header at the tube leak area on header #6 was also repaired.	1&2	13-Nov	MW	UDC
1			Repair seal skirt in multiple areas. Complete replacement is warranted during the next overhaul.	3	18-Nov	MW	UDC
1			The sluice trough appears to be in good condition along the front and side walls, but is almost completely plugged along the rear wall. Clean large ash deposits along rear wall.	4&5	X	X	X
1			A moderate amount of refractory repairs are needed in the ash hoppers.	6	X	X	X
1			Repair large area of missing brick in ... appeared to be in serviceable condition.	7	X	X	X
2			Several of the stitch welds are cracked on the seal skirt. None of these cracks are on the restore weld.				
			FRONT WATER				
Note	Front & Rear	Noted	Porosity was removed from nine of the screen hangers were. The following testing was performed. Tube #'s (Front tubes were cleared with a remaining v				
Note	Front	Noted	Porosity holes were found in the hangers; 25, 29, 96, 101, 109, 112, 121, 125, 1 Particle Testing (WFMPT) was performed.	8	X	X	X
Note	Front		The junction welds between the header and the weld - 3/16" wide, appears same as 2008 inspection, 6&7 - 5" long, 7&8 - 6" long. These were left as is.	9&10	13-Nov	MW	UDC
2	Front	1	Weld repair undercut at the slag screen hanger, test position "D" as marked.		17-Nov	MW	UDC
Note	Front	130	1-1/4" crack indication was removed by light grinding at approximately 0.030" - 0.040" deep. (Position "A") No repair needed.		X	X	X
Note	Front	131	3/4" crack indication was removed by light grinding at approximately 0.025" - 0.030" deep. (Position "A") No repair needed.		X	X	X
1	Front	133	Weld restore excavation area where crack indications were removed at position "A & B". (Both at the tube toe and the header toe of the welds) Approximately 0.090", deepest.	11	17-Nov	MW	UDC

United Dynamics Corporation
502-957-7525

UDC
Outage Report
U-2 2010

www.udc.net

Assemblies numbered right to left (E to W)

BOTTOM ASH AREA

Tubes numbered from sootblower CL out

Priority	Wall	Tube #	LOCATION WORK REQUIRED	Pic. #	DATE W/C	VERIFIED	ACC.
Note			All of the tube stubs in header #6 and #7 were replaced from the header to approximately the slag screen hanger lugs during the 2010 outage. Repair of the header at the tube leak area on header #6 was also repaired.	1&2	13-Nov	MW	UDC
1			Repair seal skirt in multiple areas. Complete replacement is warranted during the next overhaul.	3	18-Nov	MW	UDC
1			The sluice trough appears to be in good condition along the front and side walls, but is almost completely plugged along the rear wall. Clean large ash deposits along rear wall.	4&5	X	X	X
1			A moderate amount of refractory repairs are needed in the ash hoppers.	6	X	X	X
1			Repair large area of missing brick in west hopper (east wall). The brick in the other hoppers appeared to be in serviceable condition, with minor to moderate deterioration.	7	X	X	X
2			Several of the stitch welds are cracked from the header to the square bar that is hanging the seal skirt. None of these cracks are on the header side of the weld. Grind out crack indications and restore weld.				
FRONT WATER WALL TUBES IN BOTTOM ASH							
Note	Front & Rear	Noted	Porosity was removed from nine of the worst looking tubes at a repair area where the old slag screen hangers were. The following tubes were ground to the bottom of the porosity and Penetrant Testing was performed. Tube #'s (Front) - 58, 60, 61, 178, 180, 195, (Rear) 131. All of these tubes were cleared with a remaining wall thickness between 0.226" - 0.270".	8	X	X	X
Note	Front	Noted	Porosity holes were found in the hanger fillet welds (position "D") on the following tubes; 16, 21, 25, 29, 96, 101, 109, 112, 121, 125, 129, 149, 197, 201, 256, 281, 293. Wet Fluorescent Magnetic Particle Testing (WFMPPT) was performed no relevant indications were found.		X	X	X
Note	Front		The junction welds between the headers were cracked between header #'s 4&5, all the way down the weld - 3/16" wide, appears same as 2008 inspection, 6&7 - 5" long, 7&8 - 6" long. These were left as is.	9&10	13-Nov	MW	UDC
2	Front	1	Weld repair undercut at the slag screen hanger, test position "D" as marked.		17-Nov	MW	UDC
Note	Front	130	1-1/4" crack indication was removed by light grinding at approximately 0.030" - 0.040" deep. (Position "A") No repair needed.		X	X	X
Note	Front	131	3/4" crack indication was removed by light grinding at approximately 0.025" - 0.030" deep. (Position "A") No repair needed.		X	X	X
1	Front	133	Weld restore excavation area where crack indications were removed at position "A & B". (Both at the tube toe and the header toe of the welds) Approximately 0.090", deepest.	11	17-Nov	MW	UDC

Assemblies numbered right to left (E to W)

BOTTOM ASH AREA

Tubes numbered from sootblower CL out

Priority	Wall	Tube #	LOCATION WORK REQUIRED	Pic. #	DATE W/C	VERIFIED	ACC.
2	Front	168	Repair hole in weld / membrane at top side of header as marked.	12	X	X	X
Note	Front	170	1-1/2" crack indication was removed by light grinding at approximately 0.025" - 0.030" deep. (Position "B") No repair needed.	13	X	X	X
1	Front	170	Pad weld excavation area at old repair where porosity was removed (Position "C"). Remaining thickness of 0.174". Approximately 1" x 2" pad weld.		17-Nov	MW	UDC
Note	Front	174	Two small crack indications were removed by light grinding at approximately 0.010" - 0.015" deep. (Position "A") No repair needed.		17-Nov	MW	X
Note	Front	174	5/8" crack indication was removed by light grinding at approximately 0.025" deep. (Position "B") No repair needed.		17-Nov	MW	X
Note	Front	178	3/8" linear crack indication was removed by light grinding at approximately 0.025" deep. (Position "C") No repair needed.		X	X	X
1	Front	197	Pad weld excavation area at old repair where porosity was removed (Position "C"). Remaining thickness of 0.195". Approximately 1" x 2" pad weld.	14	17-Nov	MW	UDC
1	Front	300	Replace tube section due to deep crack indication at the "B" test position. The indication was approximately 0.250" deep.		17-Nov	MW	UDC
1	Front	301	Replace tube section due to deep crack indication at the "B" test position. The indication was approximately 0.220" deep.		17-Nov	MW	UDC
REAR WATER WALL TUBES IN BOTTOM ASH							
Note	Rear		The junction welds were cracked between header #'s 7&8, 1/2" long near bottom. This was left as is.		X	X	X
1	Rear	29	Weld repair undercut at the slag screen hanger, test position "D" as marked.		17-Nov	MW	UDC
2	Rear	33	Weld repair undercut at the slag screen hanger, test position "D" as marked.		17-Nov	MW	UDC
1	Rear	38	Pad weld excavation area at old repair where porosity was removed (Position "C"). Remaining thickness of 0.194". Approximately 1" x 2" pad weld.		17-Nov	MW	UDC
Note	Rear	39	3/8" crack indication was removed by light grinding at approximately 0.025" deep. (Position "A") No repair needed.		X	X	X
1	Rear	51	Pad weld excavation area at old repair where porosity was removed (Position "C"). Remaining thickness of 0.186". Approximately 1" x 2" pad weld.		17-Nov	MW	UDC
1	Rear	61	Weld repair undercut at the slag screen hanger, test position "D" as marked.		17-Nov	MW	UDC
Note	Rear	66	1/2" crack indication was removed by light grinding at approximately 0.040" deep. (Position "A") No repair needed.		X	X	X

[illegible]

IP7019899

Tubes numbered from sootblower CL out

BOTTOM ASH AREA

A - 4

Diagram illustrating the Bottom ash MT test positions. The diagram shows a horizontal pipe section labeled "Bottom ash MT test positions" connected to a circular "HEADER" on the left. The pipe extends to the right and then curves upwards. Four test positions are marked along the pipe:

- A**: Located near the header, indicated by an arrow pointing to the bottom of the pipe.
- B**: Located slightly further from the header than A, indicated by an arrow pointing to the bottom of the pipe.
- C**: Located further along the pipe, indicated by two arrows pointing to the bottom of the pipe. Below this position is the label "(Old repair area)".
- D**: Located at the end of the horizontal section, indicated by two arrows pointing to the bottom of the pipe.

IP701900



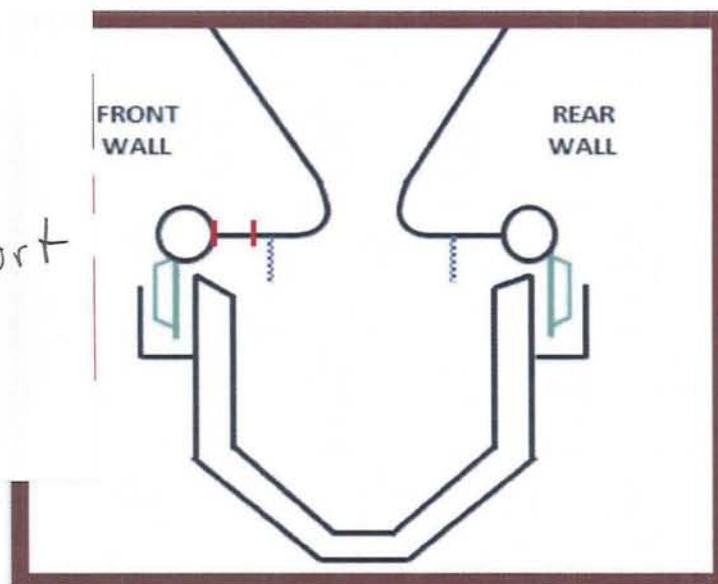
Intermountain
Unit 2
Fall 2010

United Dynamics Corporation
502-957-7525

UDC
Outage Report
U-2 2010

www.udc.net

FRONT WW HEADER TUBES



Total welds
168

Total complete
168

Remaining
0

Rejection %
2.38%

Rejected
4

Accepted
168

Header #	Tube #	Location	Weld pos.	Welder ID	Date Inspected	1st	2nd	3rd	Comment
5	170	Front WW	header stub	5174/6812	11-Nov	OK			MT BY UDC
5			tube	5174/6812	11-Nov	OK			
5	174	Front WW	header stub	5174/6812	11-Nov	OK			MT BY UDC
5			tube	5174/6812	11-Nov	OK			
6	213	Front WW	header stub	5174/6812	11-Nov	OK			MT BY UDC
6			tube	5174/6812	11-Nov	OK			
6	214	Front WW	header stub	5174/6812	11-Nov	OK			MT BY UDC
6			tube	5174/6812	11-Nov	OK			
6	215	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	11-Nov	OK			
6	216	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	11-Nov	OK			
6	217	Front WW	header stub	5174/6812	5-Nov	OK			MT by 5 Star
6			tube	5174/6812	2-Nov	OK			
6	218	Front WW	header stub	5174/6812	5-Nov	OK			MT by 5 Star



Header #	Tube #	Location	Weld pos.	Welder ID	Date Inspected	1st	2nd	3rd	Comment
6			tube	5174/6812	2-Nov	OK			
6	219	Front WW	header stub	5174/6812	5-Nov	OK			MT by 5 Star
6			tube	5174/6812	2-Nov	REJ	OK		Slag inclusion- repaired see FWW219AT & FWW219AB
6	220	Front WW	header stub	5174/6812	5-Nov	OK			MT by 5 Star
6			tube	5174/6812	2-Nov	OK			
6	221	Front WW	header stub	5174/6812	5-Nov	OK			MT by 5 Star
6			tube	5174/6812	2-Nov	OK			
6	222	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	9-Nov	OK			
6	223	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	9-Nov	OK			
6	224	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	9-Nov	OK			
6	225	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	9-Nov	OK			
6	226	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	9-Nov	OK			
6	227	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	9-Nov	OK			
6	228	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	9-Nov	OK			
6	229	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	9-Nov	OK			
6	230	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	9-Nov	OK			
6	231	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	9-Nov	OK			
6	232	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	9-Nov	OK			
6	233	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	9-Nov	OK			
6	234	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	9-Nov	OK			
6	235	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	9-Nov	OK			
6	236	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	5-Nov	OK			



Header #	Tube #	Location	Weld pos.	Welder ID	Date Inspected	1st	2nd	3rd	Comment
6	237	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	5-Nov	OK			
6	238	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	5-Nov	OK			
6	239	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	5-Nov	OK			
6	240	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	5-Nov	OK			
6	241	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	5-Nov	OK			
6	242	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	5-Nov	REJ	OK		Slag inclusion- see FWW241A
6	243	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	5-Nov	OK			
6	244	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	5-Nov	OK			
6	245	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	5-Nov	OK			
6	246	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	2-Nov	OK			
6	247	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	2-Nov	OK			
6	248	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	2-Nov	OK			
6	249	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	2-Nov	OK			
6	250	Front WW	header stub	5174/6812	9-Nov	OK			MT by 5 Star
6			tube	5174/6812	2-Nov	OK			
6	251	Front WW	header stub	5174/6812	13-Nov	OK			MT BY UDC
6			tube	5174/6812	2-Nov	OK			
6	252	Front WW	header stub	0605/2250	13-Nov	OK			MT BY UDC
6			tube	0605/2250	13-Nov	OK			
7	253	Front WW	header stub	0605/2250	13-Nov	OK			MT BY UDC
7			tube	0605/2250	13-Nov	OK			
7	254	Front WW	header stub	0605/2250	13-Nov	OK			MT BY UDC
7			tube	0605/2250	13-Nov	OK			
7	255	Front WW	header stub	0605/2250	13-Nov	OK			MT BY UDC
7			tube	0605/2250	13-Nov	OK			

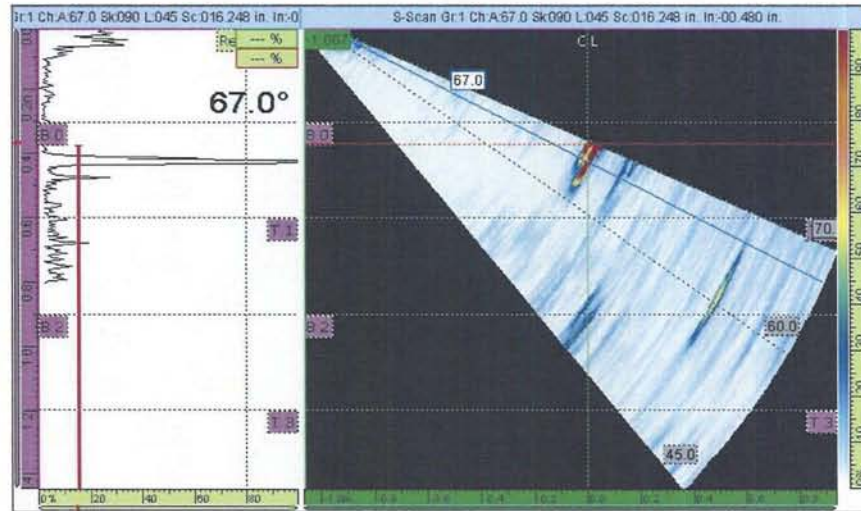


Header #	Tube #	Location	Weld pos.	Welder ID	Date Inspected	1st	2nd	3rd	Comment
7	256	Front WW	header stub	0605/2250	13-Nov	OK			MT BY UDC
7			tube	0605/2250	13-Nov	OK			
7	257	Front WW	header stub	0605/2250	13-Nov	OK			MT BY UDC
7			tube	0605/2250	13-Nov	REJ	OK		COLD LAP SEE PIC FWW257A
7	258	Front WW	header stub	0605/2250	13-Nov	OK			MT BY UDC
7			tube	0605/2250	11-Nov	OK			
7	259	Front WW	header stub	0605/2250	13-Nov	OK			MT BY UDC
7			tube	0605/2250	11-Nov	OK			
7	260	Front WW	header stub	0605/2250	13-Nov	OK			MT BY UDC
7			tube	0605/2250	11-Nov	OK			
7	261	Front WW	header stub	0605/2250	13-Nov	OK			MT BY UDC
7			tube	0605/2250	11-Nov	OK			
7	262	Front WW	header stub	0605/2250	13-Nov	OK			MT BY UDC
7			tube	0605/2250	11-Nov	OK			
7	263	Front WW	header stub	0605/2250	13-Nov	OK			MT BY UDC
7			tube	0605/2250	11-Nov	REJ	OK		COLD LAP SEE PIC FWW263A
7	264	Front WW	header stub	0605/2250	13-Nov	OK			MT BY UDC
7			tube	0605/2250	11-Nov	OK			
7	265	Front WW	header stub	0605/2250	13-Nov	OK			MT BY UDC
7			tube	0605/2250	11-Nov	OK			
7	266	Front WW	header stub	0605/2250	13-Nov	OK			MT BY UDC
7			tube	0605/2250	11-Nov	OK			
7	267	Front WW	header stub	0605/2250	12-Nov	OK			MT BY UDC
7			tube	0605/2250	11-Nov	OK			
7	268	Front WW	header stub	0605/2250	12-Nov	OK			MT BY UDC
7			tube	0605/2250	11-Nov	OK			
7	269	Front WW	header stub	0605/2250	12-Nov	OK			MT BY UDC
7			tube	0605/2250	11-Nov	OK			
7	270	Front WW	header stub	0605/2250	8-Nov	OK			MT by 5 Star
7			tube	0605/2250	6-Nov	OK			
7	271	Front WW	header stub	0605/2250	8-Nov	OK			MT by 5 Star
7			tube	0605/2250	6-Nov	OK			
7	272	Front WW	header stub	0605/2250	8-Nov	OK			MT by 5 Star
7			tube	0605/2250	6-Nov	OK			
7	273	Front WW	header stub	0605/2250	8-Nov	OK			MT by 5 Star
7			tube	0605/2250	6-Nov	OK			
7	274	Front WW	header stub	0605/2250	8-Nov	OK			MT by 5 Star
7			tube	0605/2250	6-Nov	OK			

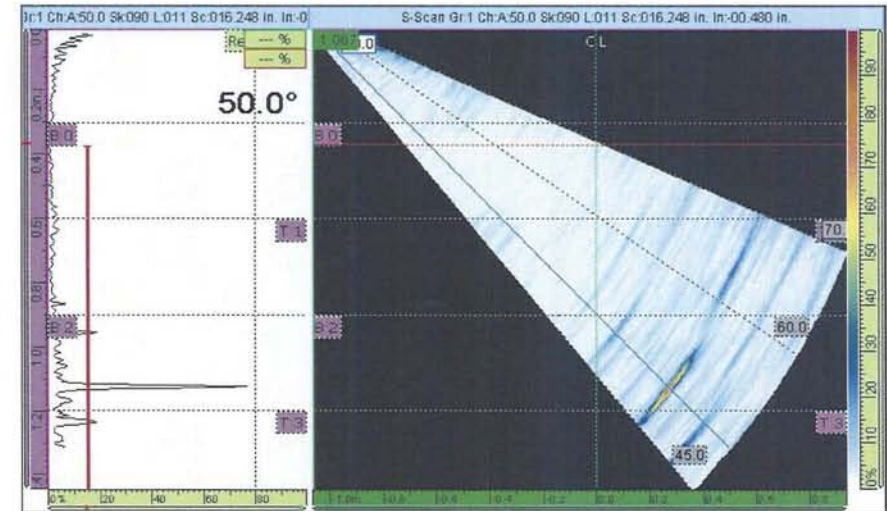


Header #	Tube #	Location	Weld pos.	Welder ID	Date Inspected	1st	2nd	3rd	Comment
7	275	Front WW	header stub	0605/2250	8-Nov	OK			MT by 5 Star
7			tube	0605/2250	6-Nov	OK			
7	276	Front WW	header stub	0605/2250	8-Nov	OK			MT by 5 Star
7			tube	0605/2250	6-Nov	OK			
7	277	Front WW	header stub	0605/2250	8-Nov	OK			MT by 5 Star
7			tube	0605/2250	6-Nov	OK			
7	278	Front WW	header stub	0605/2250	8-Nov	OK			MT by 5 Star
7			tube	0605/2250	6-Nov	OK			
7	279	Front WW	header stub	0605/2250	8-Nov	OK			MT by 5 Star
7			tube	0605/2250	6-Nov	OK			
7	280	Front WW	header stub	0605/2250	8-Nov	OK			MT by 5 Star
7			tube	0605/2250	6-Nov	OK			
7	281	Front WW	header stub	0605/2250	8-Nov	OK			MT by 5 Star
7			tube	0605/2250	6-Nov	OK			
7	282	Front WW	header stub	0605/2250	5-Nov	OK			MT by 5 Star
7			tube	0605/2250	2-Nov	OK			
7	283	Front WW	header stub	0605/2250	5-Nov	OK			MT by 5 Star
7			tube	0605/2250	2-Nov	OK			Heavy root weld on top of tube
7	284	Front WW	header stub	0605/2250	5-Nov	OK			MT by 5 Star
7			tube	0605/2250	2-Nov	OK			Heavy root weld on top of tube
7	285	Front WW	header stub	0605/2250	5-Nov	OK			MT by 5 Star
7			tube	0605/2250	2-Nov	OK			Heavy root weld on top of tube
7	286	Front WW	header stub	0605/2250	5-Nov	OK			MT by 5 Star
7			tube	0605/2250	2-Nov	OK			
7	287	Front WW	header stub	0605/2250	5-Nov	OK			MT by 5 Star
7			tube	0605/2250	2-Nov	OK			
7	288	Front WW	header stub	0605/2250	5-Nov	OK			MT by 5 Star
7			tube	0605/2250	2-Nov	OK			
7	289	Front WW	header stub	0605/2250	5-Nov	OK			MT by 5 Star
7			tube	0605/2250	2-Nov	OK			
7	290	Front WW	header stub	0605/2250	5-Nov	OK			MT by 5 Star
7			tube	0605/2250	2-Nov	OK			
7	291	Front WW	header stub	0605/2250	5-Nov	OK			MT by 5 Star
7			tube	0605/2250	2-Nov	OK			
7	295	Front WW	header stub	5174/6812	12-Nov	OK			MT BY UDC
7			tube	5174/6812	11-Nov	OK			
8	300	Front WW	header stub	0605/2250	1-Nov	OK			MT by 5 Star
8			tube	0605/2250	30-Oct	OK			

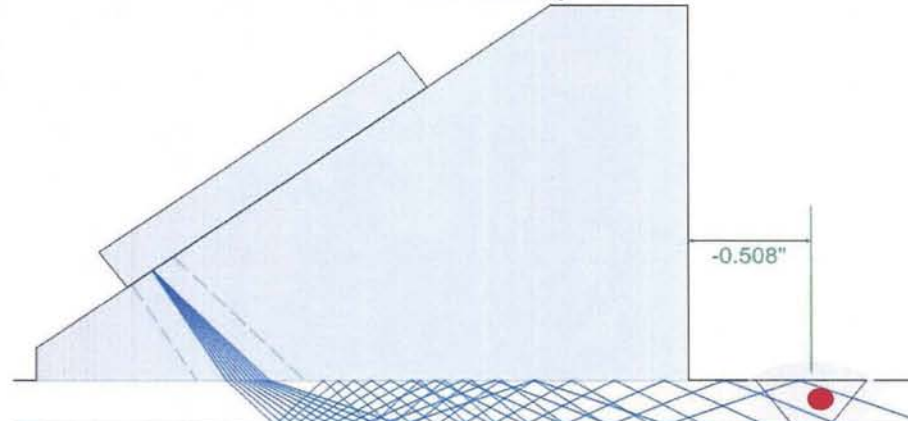
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8	301	Front WW	header stub	0605/2250	1-Nov	OK			MT by 5 Star
8			tube	0605/2250	30-Oct	OK			



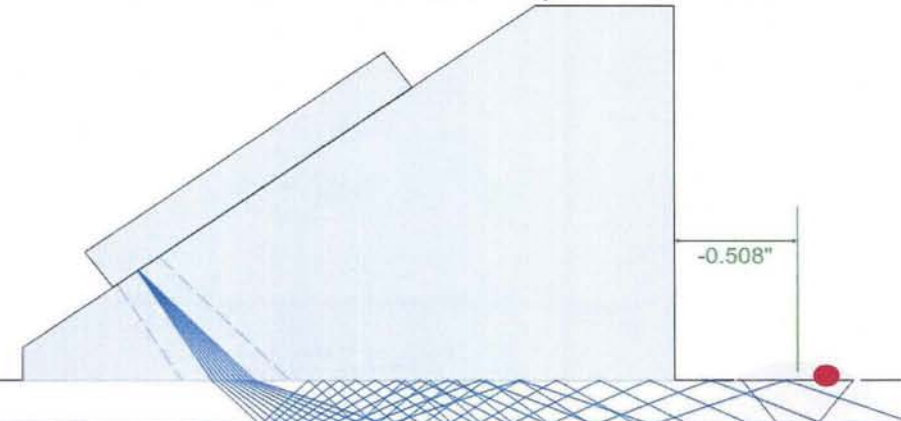
Phased Array Probe 1



Phased Array Probe 1

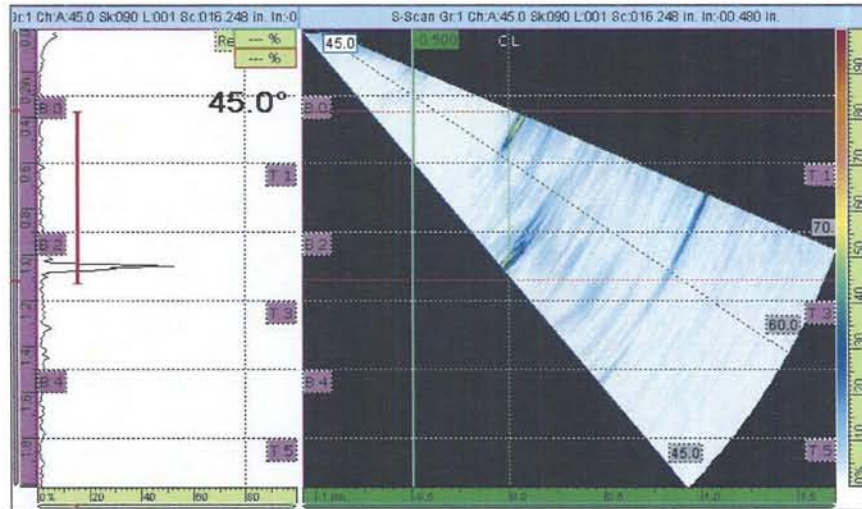


FWW219AT

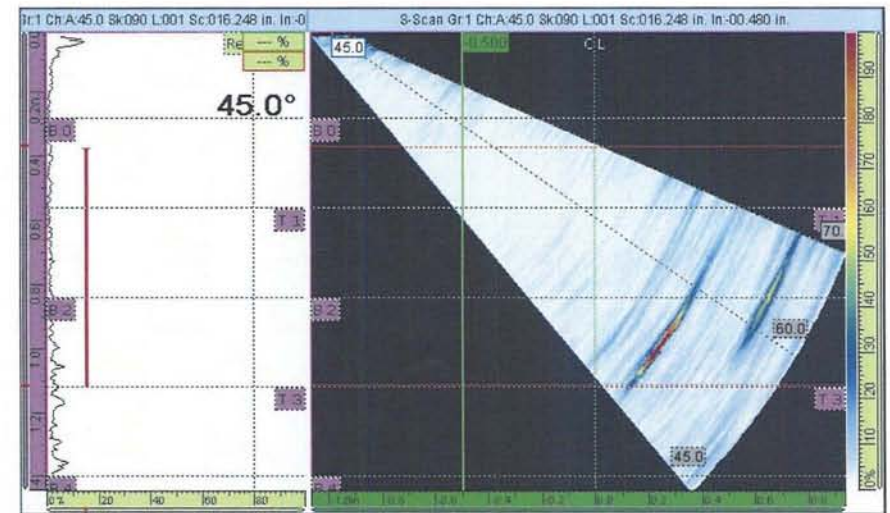


FWW219AB

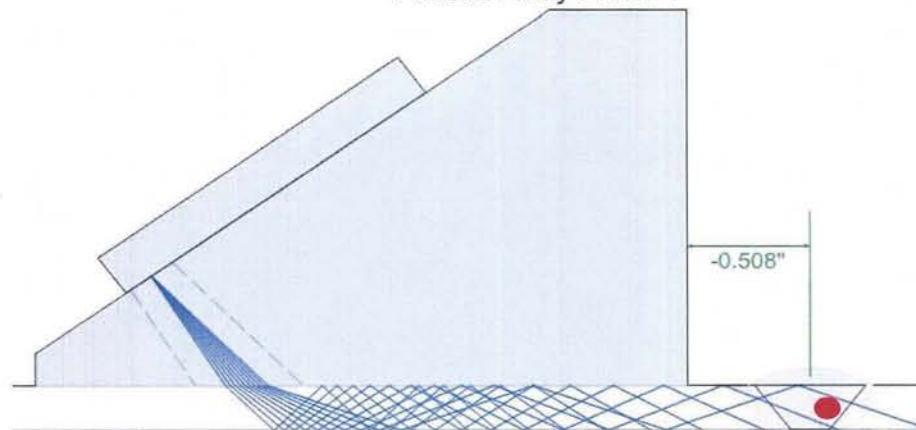
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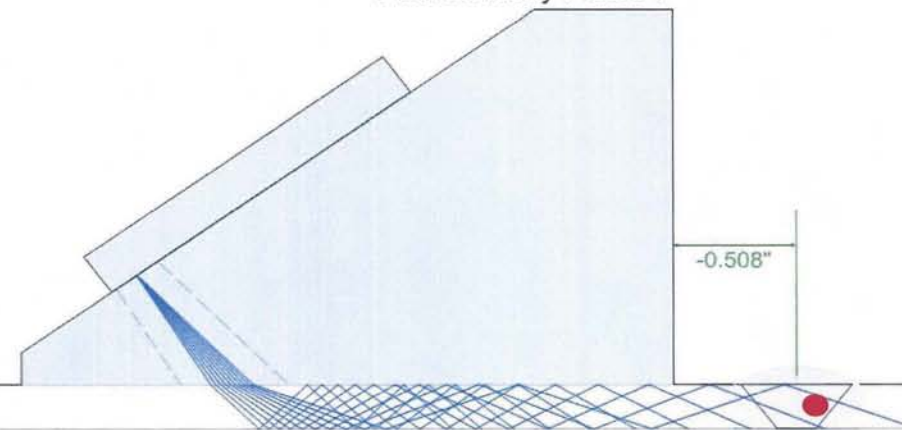
Phased Array Probe 1



Phased Array Probe 1

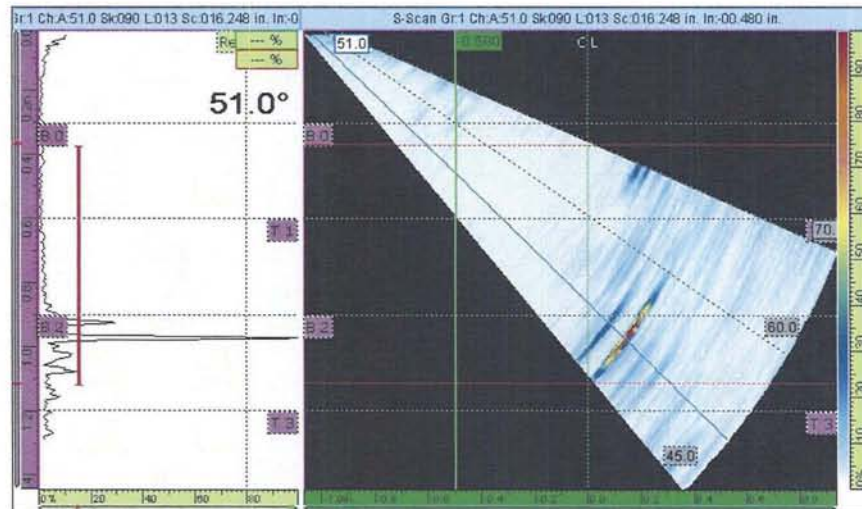


FFW241A

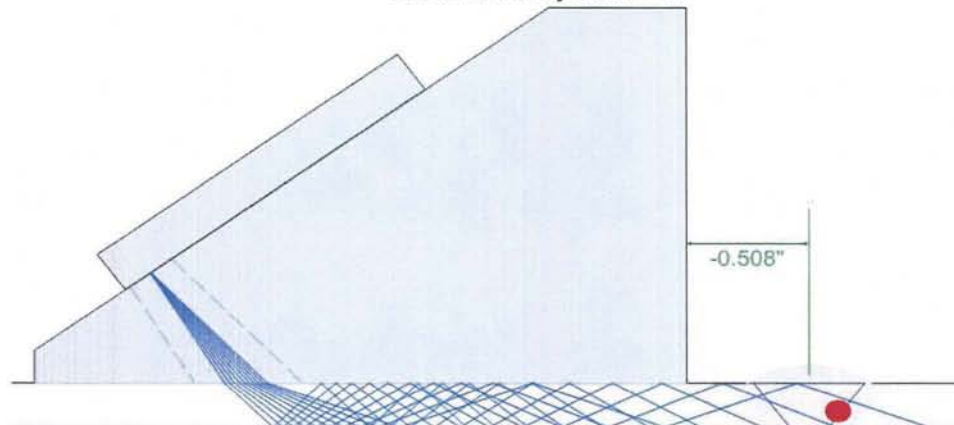


FFW263A

Header #	Tube #	Location	Weld pos.	Welder ID	Date Inspected	1st	2nd	3rd	Comment
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Phased Array Probe 1



FWW257A